

Patent Claims

1. Apparatus for detecting a predefined fill level of a medium in a container having a lid (1) by means of a conductive measuring system including at least two measuring electrodes extending into the container, wherein a measurement current (I_M) flowing between the two measuring electrodes (2, 3) is used for detecting the reaching of the predefined fill level, characterized in that

a compensation electrode (4) is provided, which is so arranged and connected that a disturbance current (I_D) flowing between one of the measuring electrodes (2, 3) and the compensation electrode due to conductive accretions on the lid (1) of the container is drained away via the compensation electrode.

2. Apparatus for detecting a predefined fill level of a medium in a container having a lid (1) by means of a conductive measuring system including at least two measuring electrodes extending into the container, wherein a measurement current (I_M) flowing between the two measuring electrodes (2, 3) is used for detecting the reaching of the predefined fill level, characterized in that

a compensation electrode (4) is provided, which is so arranged and/or connected that, on the basis of a disturbance current (I_D) flowing between one of the measuring electrodes (2, 3) and the compensation electrode due to conductive accretions on the lid (1) of the container, the degree of fouling in the region of the lid (1) of the container is determined.

3. Apparatus as claimed in claim 1 or 2, characterized in that the two measuring electrodes (2, 3) are secured to the lid (1) of the container.

4. Apparatus as claimed in claim 3, characterized in that the two measuring electrodes (2, 3) are cylindrical or columnar.

5. Apparatus as claimed in claim 1 or 2,
characterized in that the compensation electrode (4) is
constructed and arranged such that it is not contacted by the
medium upon the reaching of the predefined fill level.

6. Apparatus as claimed in claim 5,
characterized in that
the compensation electrode (4) is plate-shaped and arranged on
the lid (1) of the container.

7. Apparatus as claimed in claim 1, 2 or 3,
characterized in that
the compensation electrode (4) is arranged symmetrically between
the two measuring electrodes (2, 3).

8. Apparatus as claimed in claim 1, 2, 3 or 4
characterized in that
a first current measuring unit (13) is provided, which provides
information concerning the reaching of the predefined fill level
on the basis of the measurement current (I_M) flowing between the
two measuring electrodes (2, 3).

9. Apparatus as claimed in claim 8,
characterized in that
a first evaluating unit (14) is provided, which, on the basis of
the measurement current (I_M) registered by the first current
measuring unit (13), detects and, if necessary, signalizes when
the predefined fill level has been reached.

10. Apparatus as claimed in claim 1, 2, 5, 6 or 7,
characterized in that
a second current measuring unit (11) is provided, which, on the
basis of the disturbance current (I_D) flowing between one of the
two measuring electrodes (2, 3) and the compensation electrode
(4), makes information available concerning the degree of fouling
on the lid (1) of the container.

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11. Apparatus as claimed in claim 10,
characterized in that
a second evaluating unit (12) is provided, which, on the basis
of the disturbance current (I_D) determined in the second current
measuring unit (11), detects and, if necessary, signals that a
predetermined degree of fouling has been reached or which degree
of fouling has been reached.

12. Apparatus as claimed in claim 11,
characterized in that
associated with the second evaluating unit (12) is a memory unit
(15), in which characteristic curves and/or data are stored,
which give the degree of fouling on the lid (1) of the container
as a function of the disturbance current (I_D) flowing between one
of the two measuring electrodes (2, 3) and the compensation
electrode (4).

13. Apparatus as claimed in claim 11 or 12,
characterized in that
the evaluating unit (12) or a flow control (16) sets an alarm
signal, as soon as the degree of fouling on the lid of the
container exceeds a predetermined, tolerable degree of fouling.

14. Apparatus as claimed in claim 1 or 2,
characterized in that
the container is a metering container for a sampler.

15. Apparatus as claimed in one or more of the preceding claims,
characterized in that
the compensation electrode is constructed such that it has a
projection (18), which comes into contact with the sample medium
at a predefined, second fill level, and
the evaluating unit (14), in the case of a non-conductive sample
medium, interprets a current change in the measuring unit (11)
as a malfunction of the conductive measuring system.